Page 69, please delete lines 4-10, and substitute the following:

--A bonded vehicular glass assembly utilizes a urethane adhesive to attach a dynamic load-bearing attachment member to a glass substrate to form a joint suitable for use on a vehicle. Related methods of forming, and methods of attaching components to glass are disclosed.--

A copy of the revised Abstract on a separate page is also enclosed.

IN THE CLAIMS:

Please cancel claims 1-130, as originally filed, without prejudice.

Please add new claims 131-190 as follows:

131. A vehicular window assembly suitable for use in a vehicle, said window assembly comprising:

a glass panel having a first surface and an opposing second surface;

an attachment member,

said glass panel and said attachment member joined by an adhesive layer;

said adhesive consisting essentially of urethane, said urethane adhesive disposed between said first surface of said glass panel and said attachment member, said layer of urethane adhesive cured to form a joint suitable for use on the vehicle;

said layer of cured urethane adhesive bonding said attachment member to said first surface of said glass panel prior to installation of said assembly in the vehicle and without exposure of said bonded attachment member on said second surface of said panel; and

wherein said joint including said urethane adhesive is capable of withstanding a localized tensile load of at least 5 pounds per square inch without failure due to separation from the underlying glass.

132. The vehicular window assembly of claim 131 wherein said joint is capable of withstanding a localized tensile load of at least 40 pounds per square inch without failure.

133. The vehicular window assembly of claim 132 wherein said localized tensile load is applied in a temperature range of -40°C to about 100°C.

134. The vehicular window assembly of claim 133 wherein said attachment member has a surface area mounting footprint of less than about 6 square inches.

135. The vehicular window assembly of claim 131 wherein said joint is capable of withstanding a localized tensile load of at least 80 pounds per square inch without failure.

136. The vehicular window assembly of claim 135 wherein said localized tensile load is applied in a temperature range of -40°C to about 100°C.

137. The vehicular window assembly of claim 136 wherein said attachment member has a surface area mounting footprint of less than about 6 square inches.

138. The vehicular window assembly of claim 131 wherein said localized tensile load is applied in a temperature range of -40°C to about 100°C.

139. The vehicular window assembly of claim 138 wherein said attachment member has a surface area mounting footprint of less than about 6 square inches.

140. The vehicular window assembly of claim 139 wherein said cure of said joint is accelerated by one of a) heating, and b) at least one chemical agent.

141. The vehicular window assembly of claim 140 wherein said cure of said joint is accelerated by heating with at least one of induction heating and infrared heating.

142. The vehicular window assembly of claim 131 wherein said attachment member has a surface area mounting footprint of less than about 6 square inches.

143. The vehicular window assembly of claim 131 wherein said attachment member has a surface area mounting footprint of less than about 1 square inch.

144. The vehicular window assembly of claim 131 wherein said cure of said joint is accelerated by one of a) heating, and b) at least one chemical agent.

145. The vehicular window assembly of claim 144 wherein said cure of said joint is accelerated by heating with at least one of induction heating and infrared heating.

146. The vehicular window assembly of claim 131 further comprising a layer of at least one of an adhesive promoter and a primer disposed between said glass panel and said layer of adhesive.

147. The vehicular window assembly of claim 146 wherein said at least one of said adhesion promoter and said primer is selected from the group consisting of silane compounds, titanium coupling agents, zirconium coupling agents, and moisture-curable urethane prepolymers.

148. The vehicular window assembly of claim 146 wherein the thickness of said layer of at least one of said adhesion promoter and said primer is from about 0.01 mils to about 3.5 mils.

149. The vehicular window assembly of claim 146 wherein the thickness of said layer of at least one of said adhesion promoter and said primer is from about 0.05 mils to about 2 mils.

150. The vehicular window assembly of claim 146 wherein the thickness of said layer of at least one of said adhesion promoter and said primer is from about 0.1 mils to about 1.0 mils.

151. The vehicular window assembly of claim 131 further comprising a glass frit layer disposed on said glass panel, said glass frit layer being disposed between said first surface of said glass panel and said layer of cured adhesive such that said layer of cured adhesive bonds said attachment member directly to said glass frit layer.

152. The vehicular window assembly of claim 131 wherein the thickness of said adhesive layer disposed between said attachment member and said glass panel is from about 0.01 mm to about 4.0 mm.

153. The vehicular window assembly of claim 152 wherein the thickness of said adhesive layer is from about 0.25 mm to about 2.0 mm.

154. The vehicular window assembly of claim 153 wherein the thickness of said adhesive layer is from about 0.5 mm to about 1.0 mm.

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155. The vehicular window assembly of claim 131 wherein said attachment member is selected from the group consisting of mounting members, hinges, clevises, latches, lift brackets, division bars, positionable members, guide tracks, handles, guide pins, strut-mounting hardware, strikers, struts, power-mounting hardware, track members, rails, latch members, antennas, wiper mounts, sealing members, cosmetic articles, pin components, and hinge members.

156. A bonded vehicular assembly suitable for use in a vehicle, said assembly comprising:

a glass substrate having a first surface and an opposing second surface;

an attachment member comprising a material selected from the group consisting of metal, plastic, and combinations thereof, said attachment member being selected from the group consisting of mounting members, hinges, clevises, latches, lift brackets, division bars, positionable members, guide tracks, handles, guide pins, strut-mounting hardware, strikers, struts, power-mounting hardware, track members, rails, latch members, antennas, wiper mounts, sealing members, cosmetic articles, pin components, and hinge members; and

a layer of urethane adhesive disposed between and bonding said first surface of said glass substrate to said attachment member, said urethane adhesive disposed between said first surface of said glass panel and said attachment member, said layer of urethane adhesive cured to form a joint suitable for use on the vehicle;

said layer of cured urethane adhesive bonding said attachment member to said first surface of said glass substrate prior to installation of said assembly in the vehicle and without exposure of said bonded attachment member on said second surface of said substrate; and

wherein said joint including said urethane adhesive is capable of withstanding a localized tensile load of at least 5 pounds per square inch without failure due to separation from the underlying glass;

said localized tensile load being applied in a temperature range of -40°C to 100°C;

said cure of said joint being accelerated by one of a) heating, and b) at least one chemical agent.

157. The bonded vehicular assembly of claim 156 wherein said cure of said joint is accelerated by heating with at least one of induction heating and infrared heating.

158. The bonded vehicular assembly of claim 156 wherein said attachment member has a surface area mounting footprint of less than about 6 square inches.

159. The bonded vehicular assembly of claim 156 wherein said attachment member has a surface area mounting footprint of less than about 1 square inch.

160. The bonded vehicular assembly of claim 156 wherein said joint is capable of withstanding a localized tensile load of at least 40 pounds per square inch without failure.

161. The bonded vehicular assembly of claim 156 wherein said joint is capable of withstanding a localized tensile load of at least 80 pounds per square inch without failure.

162. The bonded vehicular assembly of claim 156 further comprising a layer of at least one of an adhesion promoter and a primer disposed between said glass substrate and said layer of urethane adhesive.

163. The bonded vehicular assembly of claim 162 wherein said at least one of said adhesion promoter and said primer is selected from the group consisting of silane compounds, titanium coupling agents, zirconium coupling agents, and moisture-curable urethane prepolymers.

164. The bonded vehicular assembly of claim 156 wherein said assembly is a movable vehicular window assembly.

165. The bonded vehicular assembly of claim 164 wherein said assembly further comprises a glass frit layer disposed on said glass substrate, said glass frit layer being disposed between said first surface of said glass substrate and said layer of urethane adhesive such that said layer of urethane adhesive bonds said attachment member directly to said glass frit layer.

166. The bonded vehicular assembly of claim 156 wherein said attachment member comprises a hinge having a first portion and a second portion that is movable with respect to said first portion, and wherein said first portion is bonded to said first surface of said glass substrate by an amount of said urethane adhesive disposed between and contacting said first portion and said glass substrate.

167. The bonded vehicular assembly of claim 166 wherein said second portion of said hinge is affixed to a vehicular mounting surface.

168. A method of adhering an attachment member to a glass surface, said method comprising:

providing a substrate having a glass surface and an opposing second surface;

providing an attachment member to be adhered to said glass surface, said attachment member having a mounting surface of less than about six (6) square inches;

providing a urethane adhesive;

depositing an effective amount of said urethane adhesive on at least one of said attachment member mounting surface and said glass surface;

positioning said attachment member and said substrate such that said urethane adhesive is disposed between and contacting said attachment member and at least a portion of said glass surface of said substrate without exposure of said attachment member on said opposing second surface of said substrate; and

curing said urethane adhesive to form a joint between said attachment member and said portion of said glass surface of said substrate including accelerating said curing by one of a) heating and b) at least one chemical agent whereby said joint which is formed is capable

of withstanding a localized tensile load of at least five (5) pounds per square inch when said load is applied at a temperature in the range of -40°C to 100°C.

169. The method of claim 168 wherein said adhesive comprises an isocyanate component and a polyol component including a high amine density plural amine compound, and wherein said method further comprises, prior to said depositing said adhesive, a step of:

mixing said isocyanate component and said polyol component.

170. The method of claim 169 wherein said high amine density plural amine compound is in an amount of from about 2% to about 20% by weight of said polyol component and said adhesive further comprises at least one filler agent in at least one of said isocyanate component and said polyol component, wherein said filler agent is in an amount of from about 15% to about 50% of the total weight of said polyol and isocyanate components.

171. The method of claim 170 wherein said filler agent is in an amount of from about 20% to about 30% of the total weight of said polyol and said isocyanate components.

172. The method of claim 170 wherein said filler agent is selected form the group consisting of silicates, silica, calcium carbonate, talc, and combinations thereof.

173. The method of claim 169 wherein said isocyanate component comprises compounds with isocyanate functionality and said polyol component comprises compounds with hydroxy and/or amino functionality, and wherein the ratio of isocyanate functionality to hydroxy and amino functionality is from about 0.9 to about 2.0.

174. The method of claim 173 wherein said ratio of isocyanate functionality to hydroxy and amine functionality is from about 1.03 to about 1.4.

175. The method of claim 174 wherein said ratio of isocyanate functionality to hydroxy and amino functionality is from about 1.1 to about 1.3.

176. The method of claim 169 wherein said high amine density plural amine compound is a compound having an amine to carbon ratio of from about 1.0 to about 0.25:1 with the provisos that (i) the compound contains at least 3 amine groups except if said compound is aromatic then said compound contains at least 2 amine groups, and (ii) the compound contains from 2 to 24 carbon atoms.

177. The method of claim 176 wherein said high amine density plural amine compound has a molecular weight of from about 115 to about 5000.

178. The method of claim 177 wherein said high amine density plural amine compound has a molecular weight of from about 210 to about 290.

179. The method of claim 169 wherein said high amine density plural amine comprises a reaction product of (i) at least one of pentaerythritrol, glucose, and sucrose, and (ii) at least one member selected from the group consisting of ammonia and amino alkanes of the formula $C_xH_nNH_2$, where x range from 1 to 20 and n is such that the alkane is saturated.

180. The method of claim 179 wherein x ranges from about 1 to about 6.

181. The method of claim 168 further comprising, prior to depositing said adhesive, a step of:

depositing a layer of at least one of an adhesion promoter and a primer to at least one of said glass surface and said attachment member mounting surface.

182. The method of claim 168 wherein the thickness of said adhesive disposed between said attachment member and at least a portion of said glass surface is from about 0.01 mm to about 4.0 mm.

183. The method of claim 182 wherein the thickness of said adhesive is from about 0.25 mm to about 2.0 mm.

184. The method of claim 183 wherein the thickness of said adhesive is from about 0.5 mm to about 1.0 mm.

185. The method of claim 168 wherein said depositing step is performed by robotic deposition.

186. The method of claim 168 wherein said depositing step is performed by utilizing a dispense metering unit and a mixing unit.

187. The method of claim 186 wherein said mixing unit is a mix tube in association with a sequential reverse mixer.

188. The method of claim 186 wherein said providing urethane adhesive is performed by delivering said adhesive through thermally controlled lines to said dispense metering unit.

189. The method of claim 168 wherein said heating is performed by a method selected from the group consisting of induction curing, infra red heating, and combinations thereof.

190. The method of claim 168 further including providing said substrate with a layer of frit on said glass surface, depositing said urethane adhesive on at least one of said attachment member mounting surface and said frit layer, and positioning said attachment member and said substrate such that said urethane adhesive is disposed between and contacting said attachment member and at least a portion of said frit layer.

REMARKS

Claims 1-130, as originally filed in the great-grandparent application, have been canceled herein and new claims 131-190 have been added. Examination on the basis of claims 131-190 is respectfully requested.

In addition, the specification has been amended to add a Cross Reference to the prior applications from which this application is continued, and to add the patent number of the applications referenced on pages 11 and 19.

New claims 131-190 are fully supported by the application as originally filed. No new matter has been added.